



Transformation

A Strategy for Reform of
Organizations and Systems

Submitted to:

Anne Mathews-Younes, EdD
Director, Division of Prevention, Traumatic Stress
and Special Programs
Center for Mental Health Services
Substance Abuse and Mental Health Services Administration
1 Choke Cherry Road, Room 6-1093
Rockville, MD 20857

Submitted by:

Sonya B. Merrill, PhD
Corporate Monitor
Educational Services, Inc.
1150 Connecticut Avenue NW, Suite 1100
Washington, DC 20036

Date Submitted:

January 18, 2005



Transformation

A Strategy for Reform of
Organizations and Systems

Transformation: A Strategy for Reform of Organizations and Systems

Contents

| | |
|---|-----------|
| Definition of Transformation | 2 |
| Transformation Theorists | 4 |
| <i>Lewin's Model</i> | 4 |
| <i>Kuhn's Paradigm Shift</i> | 5 |
| Key Elements in the Transformation Process | 5 |
| <i>Vision</i> | 5 |
| <i>Leadership</i> | 5 |
| <i>Alignment</i> | 7 |
| <i>Culture</i> | 7 |
| <i>Continual Process</i> | 8 |
| Challenges and Lessons Learned | 8 |
| <i>Frequent Barriers</i> | 8 |
| <i>Guidelines Based on Experience</i> | 9 |
| Outcomes of Transformation | 9 |
| References | 11 |

Transformation: A Strategy for Reform of Organizations and Systems

Transformation, a complex, revolutionary, and continuous process, demands fundamental changes in the organizational structures and systems through which products are developed and services are delivered. In this process, laws often must be modified; norms and values, reassessed; and systems of service delivery and finance, changed. In addition, those involved in carrying out the changes as well as those who will benefit

from it must be reeducated to acquire and apply new knowledge

needed for the transformation. Guided by visionary leadership, transformative change can gather momentum until it reaches “a tipping point” where it will spread like an epidemic throughout the many intertwined systems and dramatically alter how organizations and systems operate (Gladwell, 2000).

Fundamental system change is occurring throughout the public and private sectors. Industries and businesses, with clear financial incentives to improve profits and stay abreast of new consumer demand, led the transformation charge by rethinking outmoded ways of generating products and serving customers. Their efforts focus on increasing market share by such methods as improving efficiency in processes, employing the latest computer technologies, and listening to what customers really are asking for. Federal and State Governments have begun similar efforts to transform their

operations and the quality of services delivered. Major system changes in health service delivery are underway, and mental health service system transformation is a top national priority. Through these type of efforts, all Americans benefit and enjoy more rapid access to information, lower costs for many products and services, and an enhanced focus on needs of the customer.

“Successful, large-scale transformation requires integration and change in structure, process, and pattern.”

This overview outlines fundamental concepts of

systemic and organizational change and transformation’s key elements. It highlights some relevant examples of transformation efforts and addresses frequent challenges, including lessons learned. The purpose is to provide a common conceptual understanding to individuals who are planning or are involved in transformative change initiatives.

Definition of Transformation

Although a dictionary definition of transformation – an act, process, or instance of transforming or being transformed – may appear straightforward, modern theorists have spent decades conceptualizing and describing the complex and unpredictable processes involved in transformation. They have examined transformation as it relates to changing the composition, outward form, or character of living things and inert

objects as well as the systems that organize life in our communities and Nation. Research suggests that successful, large-scale transformation requires integration and change in structure, process, and pattern (Institute for Healthcare Improvement, 2004). It involves forward-thinking, not, as one expert observed, looking backward at reform (Barger, 2004). Transformation is meant to identify, leverage, and even create new underlying principles for the way things are done. It also seeks to identify and leverage new sources of power (Cebrowski, 2002).

In recent years, varying types and degrees of systemic change have become commonplace in the public and private sectors. As one expert notes, “the scope of change being undertaken by companies can be placed on a continuum, with incremental change at one extreme and radical (neutron bomb), clean-slate transformation at the other” (At Jasper Associates [AJA], n.d.). Another writer contrasts change with transformation. “Change itself is not enough. Change is merely a variation of a situation, repetitive and cyclical in nature, while transformation is an alteration of its essence. Transformation assumes the need for a fundamental shift to another level of thought and action, a change in consciousness” (Neal & Conhaim, n.d.).

Although several terms associated with major organizational or systemic change are used interchangeably with transformation, these do not convey the full vision the transformation process.

“Transformation assumes the need for a fundamental shift to another level of thought and action, a change in consciousness.”

Some of these terms – total quality management or total quality improvement, reengineering, right sizing, and restructuring – refer to methods for affecting change; however, they imply less-sweeping change than the term transformation. Even reform – often used to describe major change – does not connote the more revolutionary characteristics of transformation (Mazade, 2004).

Selected examples of closely related terms and their definitions follow.

Reinvention. Reinvention implies “something tantamount to changing the very ‘DNA’ of public organizations so that they habitually innovate” In this process they are continually improving their performance without having to be pushed from the outside. Reinvention means building an entrepreneurial organization with a built-in drive to improve or “what some would call a self-renewing system.”(Osbourne & Plastrik, 1997).

Redesign. “Enterprise redesign” also is depicted as revolutionary rather than evolutionary. Related to organizational development, redesign usually requires devising a new strategic vision and competitive strategy, with the concomitant development of entirely new business processes (AJA, 2004).

Stephen Haines (2004) describes how transformative change is fundamentally different than other change processes:

It results in a major structural and fundamental impact on the entire organization;

It is complex and chaotic in nature or will constitute a radical departure from the current state, and is so complex that desired outcomes and approaches to achieve them may be unclear;

The scale of desired change is large and will result in a significantly different enterprise;

It requires years to complete, with multiple phases and stages of major changes;

The rules of the game change, including the norms, guideposts, values, and guides to behavior.

Thus, while organizations and systems may have initiated change in the past, those that undertake transformation face a significantly more complex and challenging journey. However, the potential rewards of the transformation efforts can exceed dramatically those achieved by more limited changes. (See box, this page.)

Transformation Theorists

The current concepts of organizational

and systems transformation derive from many theoretical frameworks, including work in organizational psychology. Two leading theorists, Kurt Lewin and Thomas Kuhn, provide helpful conceptual frameworks for those embarking on transformation efforts.

Lewin's Model

Social scientist Kurt Lewin, combining the theories of sociology and psychology, developed a three-stage model for large-scale system change. The stages are: (1) “unfreezing,” or opening up and examining the patterns of norms, values, and beliefs that hold a system together and discussing concerns about change; (2) “moving,” or planning and implementing the change process, while continuing the ongoing and transparent communication within the system; and (3) “freezing,” or consolidating and integrating the changes to establish a new “quasi-stationary” equilibrium of the system and prevent reversion to the old ways of doing things. According to Lewin, social system change is not a steady, ongoing process, but rather occurs in spurts consisting of alternating periods of movement and standing still. Lewin suggests: (1) social systems, in contrast

The Department Of Veterans Affairs’ Success Story

In the mid-1990s, the Department of Veterans Affairs (VHA) initiated an effort to improve its quality of care. Using data from an ongoing performance-evaluation program, the VHA evaluated the quality of preventive, acute, and chronic care. Findings led the agency to undertake a major transformation through reengineering of the entire patient services delivery systems. As a result, the quality of care in the VHA health care system substantially improved. The agency achieved a satisfaction ranking that far exceeded private sector hospitals and other Government service ratings according to the 2001 American Customer Satisfaction Index (ACSI) ranking (Department of Veterans Affairs, 2001).

to physical systems, cannot be changed directly, but have to be prepared for change and movement; and (2) a social change process has to be followed by consolidation and integration, providing a new state of balance and a new sense of "normality" and predictability (AJA n.d.-A).

Kuhn's Paradigm Shift

Thomas Kuhn captured the essence of revolutionary system change when he came up with the term "paradigm shift" in his 1962 landmark work, *Structure of Scientific*

Revolutions.

Originally a description of the scientific

process and later expanded to encompass many domains, the term paradigm shift describes the process and result of a change that implies a total revolution in theory or worldview (Wikipedia n.d). Questioning the traditional view of scientific progress as a gradual, cumulative acquisition of knowledge, Kuhn held that when the scientific world amasses sufficient evidence that contradicts its current theories and methods, science is thrown into a crisis. As a result of this "intellectual revolution," a new paradigm is formed (Wikipedia). Paradigm shift is the colloquial term frequently used to describe this often radical change of worldview (Wikipedia). This shift alters the fundamental concepts underlying research and inspires new standards of evidence, new research techniques, and new pathways of theory and experiment (Brown, Crawford, & Hicks, 2003).

Key Elements in the Transformation Process

Experts have defined five elements, highlighted below, as essential for orchestrating large-scale, transformative change.

Vision

A clear and compelling vision is a key ingredient for successful transformation. Developing a vision requires defining a "perfect world" and clear principles to

guide the transformation effort (Society for Technical Communication

[STC] 2004). It should constitute a shared image for a desired future state – not a strategic plan, but the inspiration that will motivate people to create such a plan and willingly make the special effort to achieve it (Sugarman, 2000).

As Kotter (1996,) explains, a successful vision encompasses a sense of urgency to overcome stakeholder complacency. A well-defined vision clarifies the general direction for change, motivates people to take action in the right direction, and helps coordinate people's actions. To assess the effectiveness of a vision, planners may want to ask: Is it imaginable, desirable, feasible, focused, flexible, and communicable?

Leadership

Transformation efforts require exceptional leadership abilities. Leaders must have both the capability to formulate a compelling vision and the skills to organize and manage the change processes. These skills may reside in

"A clear and compelling vision is a key ingredient for successful transformation."

more than one person. In addition to developing and communicating the vision, the leadership's responsibilities involve developing a coherent transformation plan, maintaining a focus on key transformation goals, and managing external changes to complement internal ones (Kotter, 1996).

A transformative leader can "guide, direct, and influence others to bring about a fundamental change not only of the external world but also of internal processes" (Jahan, 2003). In transformation, Cebrowski (2004) notes that leadership plays a fundamental role by creating a vision of the future as well as inspiring people

regarding their place in that future. He states, "If the senior leaders do not own transformation, there is no sense in pursuing it." These executives do not necessarily have to declare that they own transformation, but they should convey that transformation is part of the entire organizational strategy in which each employee is involved. Leadership must establish an incentive structure that will maximize good management, encourage exploratory jumps, and harness resources to empower "big jumps." (See box, previous page.).

Bernard Bass (1990) describes "transformation leadership," whereby a leader transforms, or changes, followers by increasing their awareness of the need

Defense Transformation for the 21st Century

Within the United States military, transformation required changing the form or structure of the military forces, the nature of the military culture and doctrine supporting those forces. It also involved streamlining fighting functions to more effectively meet the complexities of the new threats challenging the Nation in the new millennium. (United States Joint Forces Command [USJFC], 2004).

Arthur Cebrowski, Director of Force Transformation, Office of the Secretary of Defense, Department of Defense (DoD), identifies a five-part strategy used in the DoD for a recent reform of military forces (Cebrowski 2004). He depicts the process used in this effort as consisting of major thrusts rather than sequential "steps." It consists of:

1. Developing a top-down approach by having transformation an integral element of the DoD corporate strategy (beginning with the President) in order to foster effective management (efficiencies, cutting waste, recapitalization, and modernization);
2. Targeting and creating cultural change by use of bottom-up tools such as experimentation; prototyping of a new idea for a process, organization, or technology; and education as life-changing experiences in the field where people are lauded for experimenting and using innovation;
3. Creating a new underlying theory, such as harnessing the power of the information age, to instill network behavior;
4. Aligning metrics and seeing that they are adopted via performance measures, outcome measures, and so forth; and
5. Creating new capabilities.

In this process, transformation can occur through both exploratory jumps that "push out the boundaries and big jumps to change the fundamentals of what one is trying to do." (Cebrowski, 2004) These jumps, if realized, transform the enterprise.

to perform tasks well, making them aware of their needs for personal growth and accomplishment, and motivating them to work for the good of the organization instead of just their own personal gain. At least three stages of change management demand transformational leadership: motivating changes in behavior and overcoming resistance; managing the transition to ensure control; and shaping the political dynamics so that power centers develop that support change (Nadler, 1983).

Alignment

A system's structures and processes must be aligned with the idealized vision in order for relevant persons, organizations, and systems to participate in the transformation process. (STC, 2004).

According to *Crossing the Quality Chasm: A New Health System for the 21st Century* (National Academy Press, 2001), four strategies are required for large-scale alignment: finance reform; retraining of human resources; developing performance measures and information technology; and identification and implementation of evidence-based practices. Similarly, Durant (2004) recommends that administrative, responsibility, and accounting structures be aligned and that central administrative units do not undermine the change strategy. Kotter, (1996) underscores the power of systemic structures working in concert with empowered employees, stating that:

“Success hinges on creating a culture of innovation that encourages and rewards those who embrace innovative risks.”

Discouraged and disempowered employees never make enterprises winners in a globalizing economic environment. But with the right structure, training, systems, and supervisors to build on a well-communicated vision, increasing numbers of firms are finding that they can tap an enormous source of power to improve organizational performance. They can mobilize hundreds or thousands of people to help provide leadership to produce needed changes.

Culture

As defined by Kotter (1996), “Culture refers to norms of behavior and shared values among a group of people.” In large organizations, a variety of social forces affect everyone; these forces comprise the corporate culture. He states that corporate culture has a significant influence on human behavior, noting culture is difficult to change and essentially invisible. Kotter believes that organizational culture is powerful because: (1) individuals are selected and indoctrinated so well; (2) the culture exerts itself through the actions of hundreds or thousands of people; (3) the effects happen without conscious intent and thus are difficult to challenge or even discuss. Despite the challenges, visionary leaders do spearhead cultural change within their systems. Cebrowski (2002, recommends that leaders of transformation efforts realize success hinges on creating a culture of innovation that encourages and rewards those who embrace innovative risks.

Continual Process

According to Durant (2004) it is important to understand that transformation is an ongoing and permanent campaign. Cebrowki (2003) adds that change processes, “whether or not they...have a preconceived end point, are intended to create or anticipate the future and to simultaneously deal with the co-evolution of concepts, processes, organizations, and technologies wherein change in any one of these necessitates change in all.”

Challenges and Lessons Learned

A variety of potential obstacles may immediately or eventually impede the transformative process. Some of these obstacles result from inaction by key parties. Such obstacles include the lack of a clear vision; nonexistent or poor leadership; lack of critical mass; lack of parties’ incentives to move forward; and lack of participation. (Spodark, 2003). Stakeholders may be hesitant to move forward due to fear of the unknown; the view that there is no need to change; and fear of a failed attempt to transform. (Hagner, 2000).

Frequent Barriers

Haines et al. (2004) suggest that the three primary reasons large-scale change efforts fail are: (1) an analytic, piecemeal approach to system-wide problems (with multiple conflicting frameworks and mindsets); (2) a focus primarily on the economic alignment of delivery (an artificial “either/or” mindset); and (3) a focus primarily on cultural attunement and people issues (another artificial “either/or” mind set).

Senge et al. (1999) suggest the barriers encountered in organizational transformation initiatives as: difficulty in translating successes achieved in smaller units and applying them broadly within the larger organization or system; and challenges in obtaining long-term, sustained support for investing in organization- or system-wide capacity building. Other problems may include: truncated learning (when learning efforts are interrupted or only partially implemented); learned helplessness (passive response exhibited by individuals, teams, and even organizations when their efforts to take control are met with resistance or even punishment); and tunnel vision (when

Information Technology: Means For Transformation

Kaiser-Permanente (KP) is investing large sums of money and effort to implement KP HealthConnect, a suite of medical information tools to lead American health care into a new age (Weiland, 2004). The transformation will improve interactions between clinicians, members, and the organization as a whole; clinician-clinician interactions; and clinician-patient interactions. During 2004, each local KP affiliate launched the KP HealthConnect suite of systems. The program stressed creating an environment that fosters the creative use of the tool, observing the impacts of that creativity, and widely propagating the successful ideas while pruning out the unsuccessful ideas or the old processes. In this effort, transformation will occur when a user or group of users figures out how to use the new tool to do something completely new, something perhaps that could not have been done before. Progress toward this transformation is continuing at KP today. A number of lessons have been learned that will assist other organizations in its continuing transformation efforts (Wiesenthal, 2004,

people do not have the perspective and appreciation of their connection to the whole complex systems) (Watkins & Marsick, 1993).

Guidelines Based on Experience

In his *Leading Discontinuous Change: Ten Lessons from the Battlefield*, David Lawrence, former CEO of the Kaiser Permanent Health Care System (KP) identified the following “lessons learned” drawn from his experiencing overseeing KP’s transformation efforts. These practical guidelines can be helpful to those undertaking similar, large-scale transformation initiatives.

1. Do not expect people to embrace easily the need for change.
2. Sometimes it is better to experiment than to plan.
3. Pay close attention to the timing of change.
4. When the need to remove people becomes clear, do not put off the inevitable.
5. You cannot succeed without a senior team that thinks and acts as a team.
6. Give coherence to the change process by clearly articulating a central mission and a consistent set of themes.
7. Even though the content of change may be radical, the building process must be methodical.
8. Think of change as a campaign that must be waged simultaneously on a variety of fronts.
9. This race may not have any finish line, so keep looking for

reasons to stop and celebrate along the way (Power, 2003)

Outcomes of Transformation

“Transformation is ultimately about newness, about new values, new attitudes, and new beliefs,” according to

“Transformation is ultimately about newness, about new values, new attitudes, and new beliefs.”

A. Kathryn Power, Director of the Center for Mental Health Services, Substance Abuse

and Mental Health Services Administration. “It is about how these changes are expressed in new behaviors of people and institutions (Power, 2004A). Power points out, “It is not accomplished through change on the margin but instead, through profound changes at the core....These changes lead to new behaviors and new competencies” (Power 2004B).

The challenge now confronting government agencies at all levels and many private sector organizations lies in embracing the concept of transformation. Their leaders must formulate and communicate a unique vision for the future, offering the needed support and providing the essential visionary and operational direction. Employing theoretical models and practical implementation methods used in other successful transformations, the United States can be prepared to meet the global and national challenges confronting our society. Then, as Power points out, we will be able to “look at what we can do now that we were unable to do before” (Power, 2004B).

Outcomes will mean improved competitiveness in the global economy and more effective systems for

performing the essential functions of government. Thus, by responding successfully to the challenge of transformation, our Nation can look forward to a new reality when all Americans can enjoy a meaningful life in their community.

References

- At Jasper Associates, (AJA) Organisational change and transformation. (n.d.) Retrieved January 3, 2005 from www.aja4hr.com/services/organisational_capability_assessment.shtml
- AJA (n.d.A). Becoming receptive to change. Retrieved January 3, 2005 from http://www.aja4hr.com/services/change_management.shtml
- Barger, D. G. (2004). It is time to transform, not reform, U.S intelligence. [Electronic version]. *SAIS Review*, 24, No. 1, Retrieved January 3, 2005 from <http://www.saisreview.org/PDF/24.1barger.pdf>
- Bass, B (1990). "From *transitional to transformational leadership: Learning to share the vision*," *Organizational Dynamics*, Winter, 1990. pp 140-148.
- Brown, B., Crawford, P. & Hicks, C.M. (2003). Evidenced-based research: Dilemmas and debates in health care. In *Theories of science and theories of society* (chap. 1). Retrieved January 3, 2005 from <http://www.mcgraw-hill.co.uk/openup/chapters/033521164X.pdf>
- Cebrowski, A. (2002) Fateful lightning: Perspectives on IT in defense transformation: An interview with the director, (Electronic version] Information Technology Association of America interview, August, 2002. Retrieved January 3, 2005 from http://www.oft.osd.mil/library/library_files/trends_164_transformation_trends_28_october_issue.pdf
- Cebrowski, A. (2003) Network centric warfare and transformation. Speech on January 22, 2003.
- Cebrowski, A. (2003, September 27) Speech to the Northern Virginia Chapter, Armed Forces Communications and Electronics Association.
- Cebrowski, A. (2004) Presentation at the NAMSHPD Research Institute's change management meeting, October 8, 2004. Alexandria, VA: NASMHPD Research Institute, Inc.
- Department of Veterans Affairs (2001). VHA scores highest in patient satisfaction ratings. Retrieved January 3, 2005 from <http://www.gla.med.va.gov/Documents/VHA%20Scores%20Highest%20in%20Patient%20Satisfaction%20Ratings.htm>
- Durant, Robert F. (2004). Networking in the shadow of hierarchy: From forward to backward mapping. Presentation at the NAMSHPD Research Institute's change

management meeting, October 8, 2004. Alexandria, VA: NASMHPD Research Institute, Inc.

Gladwell, M. (2000). *The tipping point: How little things can make a big difference*. Boston: Little, Brown and Company

Hagner, P. (2000). Best practices in faculty engagement and support. National Learning Infrastructure Initiative, 2000. White paper draft, Seattle, WA. Retrieved January 3, 2005 from <http://www.educause.edu/LibraryDetailPage/666&ID=NLI0011>

Haines, S., Aller-Stead, G. & McKinlay, J.(2004) *Enterprise-wide change*. NY:Wiley.

Institute for Healthcare Improvement, presentation by James Reinertsen, July 14, 2004, Retrieved January 3, 2005 from http://www.modern.nhs.uk/pursuingperfection/24214/24256/Exeter_July_14_2004_Stages_of_Organisational_Transformation.ppt#260,1,Stages of Organisational Transformation

Jahan, R. (2003). Transformation leadership in the twenty-first century. Center for Asia Pacific Women in Politics Conference. Retrieved January 03, 2005 from <http://www.capwip.org/resources/womparlconf2000/downloads/jahan1.pdf>

Kotter, J. (1996). *Leading change: Why transformation efforts fail*. Boston: Harvard Business School. Electronic summary retrieved January 6, 2005 from <http://harvardbusinessonline.hbsp.harvard.edu/b02/en/common/viewFileNavBean.jhtml>

Mazade, N.A. (2004) Concepts of “transformation.” Manuscript submitted for publication.

Nadler, D. A. (1983). Concepts for the *Management of organizational change*. Del Consulting Group.

National Academy Press, National Institute of Medicine (2001). Crossing the quality chasm, executive summary. [electronic version] Washington, DC: National Academies Press. Retrieved January 6, 2005 from <http://www.nap.edu/execsumm/0309072808.html>

Neal C., and Conhaim, W., Moving beyond change: An opportunity to transform our organizations. (n.d.) Retrieved January 3, 2005, from www.heartlandinstitute.com/_pdf/Moving%20Beyond%20Change.doc

Osbourne, D. & Plastrik, P. (1997) *Banishing bureaucracy: The five strategies for reinventing government*, Reading, MA: Addison Wesley.

Power, A. K., (2003). Systems transformation and the New Freedom Commission’s report. Speech presented at the 19th annual Rosalyn Carter Symposium on Mental Health Policy, November 5, 2003. Retrieved November 8, 2004 from www.mentalhealth.samhsa.gov/scripts.printpage.aspx

Power, A.K. (2004A) Remarks presented the acute care providers. Retrieved January 3, 2005 from <http://www.mentalhealth.samhsa.gov/newsroom/speeches/081904.asp>

Power, A. K. (2004B) Achieving the promise of transformation: New freedom, new power, new hope. Videotaped presentation September 30, 2004. Transcript retrieved on January 3, 2005 from <http://www.mentalhealth.samhsa.gov/newsroom/speeches/101204b.asp>

Senge, P., Roberts, C., Ross, R., Roth, G. Smith, B., & Kleiner, A. (1999) *The dance of change: The challenges of sustaining momentum in learning organizations*. New York: Doubleday.

Society for Technical Communications (STC). (2004). A model for transforming STC. Retrieved January 3, 2005 from <http://www.stc.org/transformation/article6.asp>

Spodark, E. (2003) Five obstacles to technology integration at a small liberal arts university. *Technology Horizons in Education Journal*. March, 2003. Retrieved January 3, 2005 from <http://www.thejournal.com/magazine/vault/A4344.cfm>

Sugarman, B. (2000). A Learning-based approach to leading change. [Electronic version.] Cambridge, MA: Society for Organizational Learning. Retrieved January 3, 2005 from http://www.solonline.org/repository/download/SugarmanReport.pdf?item_id=357321

United States Joint Forces Command (2004), What Is Transformation? <http://www.jfcom.mil/about/transform.html>

Watkins, K. & Marsick, V. (1993) Overcoming barriers to change. Abstract retrieved January 3, 2005 from <http://sll.stanford.edu/projects/tomprof/newtomprof/postings/215.html>

Weiland, A., (2004) KP HealthConnect as a transformation tool. *The Permanente Journal*, Fall 2004., [Electronic version.] Retrieved January 3, 2005 from <http://xnet.kp.org/permanentejournal/fall04/tool.pdf>

Weisenthal, A.M. (2004) This is getting serious. *The Permenente Journal*, Fall 2004. [Electronic version.] Retrieved January 3, 2005 from <http://xnet.kp.org/permanentejournal/fall04/serious.pdf>

Wikipedia, the free encyclopedia (n.d.). Retrieved January 3, 2005 from http://en.wikipedia.org/wiki/Paradigm_shift